detecting a buffer circuit depth;

determining the priority associated with a current data packet; and

processing the current packet in response to the current data packet flow rate, the data packet priority, and the current buffer circuit depth.

REMARKS

Claims 4 and 5 have been allowed. Claim 7 was objected to because it contained two (2) periods. Claim 7 as amended above, corrects the typographical error that was made when claim 7 was amended by the Applicant's previous amendment.

Claims 6, 11 and 12 were rejected under U.S. pat. No. 6,081, 505 to Kilkki. For the reasons set forth hereinafter, claims 6, 11 and 12 are in fact allowable over the Kilkki reference.

A close inspection of the Kilkki reference reveals that claims 6, 11 and 12 are in fact patentably distinct from and allowable over the Kilkki reference. The Examiner's rejection of claims 6, 11 and 12 under Kilkki is based upon a misunderstanding that Kilkki describes a method that includes:

1. determining a service flow for the packet;
2. quantizing the data packet flow rate into one priority level;
3. detecting the buffer depth, and
4. processing the packet in response to the flow rate, the packet priority, and the buffer depth

as claimed in the instant application.

The Examiner has misunderstood at least one subtle but significant difference in the meaning of the word "priority level" as used in the Kilkki reference and as the term "priority level" is used (and therefore claimed) in the instant application.

"Priority level" is defined in the instant application to have a meaning that is distinctly different than the meaning of the word "priority level" as used in Kilkki. As a result, the claims of the instant application are to a distinctly different invention that that which is disclosed in Kilkki.

In Kilkki, the word "priority" (and "priority level") defines the *calculated* relative flow rate of a service flow (the Measured Bit Rate, MBR, relative to the Nominal Bit

Rate, NBR). In Kilkki, the term "priority level" is a quantized calculation or measurement of a data flow rate. This fact is clearly stated in the example Priority Level (PL) calculation shown in box 76 of Fig. 3, where the PL is defined to be a function of x, where x= 4.5+ln(MBR/NBR)/ln(2). Thus, Kilkki's "priority level" is a calculated quantization of the packet flow rate. This definition of "priority level" is also expressly stated in the Kilkki specification in column 12, at line 10.

$PL_{cell\text{-}6}=3$

Referring once again to FIG. **3**, and having determined **74** the measured bit rate, MBR_i, of the i:th cell, the priority level computing unit **28** computes **76** the priority level of the i:th cell using the measured bit rate, MBR_i, and the nominal bit rate, NBR. In accordance with one embodiment, it is assumed that a cell may be distinguished from other cells using a cell prioritization scheme that employs eight priority levels. The illustrative example provided above, for example, assumes the availability of one of eight priority levels that may be assigned to a cell. In order to indicate which of the eight priority levels is attributed to a particular cell, each cell allocates three bits for this purpose.

Figure 1: Excerpt from col. 12 of Kilkki patent.

Claims 6 and 11 are rejected under 35 U.S.C. 102(e) as being anticipated by Kilkki (US 6,081,505).

3. Regarding claim 6, Kilkki discloses a method for providing data packet congestion control (abstract, last five lines). The method comprises the steps of determining the particular service flow associated with a data packet and the flow rate of the particular service flow (Figure 1, step 44 and Figure 2), quantizing the data packet flow rate into at least one priority level (Figure 3, step 76), detecting the instantaneous buffer circuit depth (Figure 1, step 50), and processing the packet (Figure 1, steps 52 and 54) in response to the data packet flow rate, the

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data packet priority, and the current buffer circuit depth. The number of priority levels, as determined by the current service flow rate, may be four (col. 12, lines 45-46).

Figure 2: Excerpts from pages 2 and 3 of the 9/25/2001 office action.

The Examiner's statement in the last line of paragraph 3 on page 2 of the Office Action, (that Kilkki describes a means to process the packet in response to the flow rate, the packet priority, and the buffer depth) and which is reproduced above, is not true because the flow rate and the packet priority in Kilkki (according to Kilkki's definition of "priority") are one in the same. In Kilkki, the priority level is merely a calculated quantized version of the flow rate. Thus, Kilkki only teaches processing the packet in response to the flow rate (which is also Kilkki's priority level) and the buffer depth.

In the instant application, "priority" is a concept distinctly different from the "priority" defined in Kilkki. In the instant application, "priority" specifies a customer's service level (or willingness to pay more money for a higher grade of service) which data packets are *assigned* and the rate or speed at which they are entitled to be routed.

In Kilkki, "priority" is *calculated* based upon a rate at which data flowed through a network. In the instant application, "priority" is assigned and is tantamount to a directive to a network, mandating or controlling the rate at which the network is to route data that has been assigned a certain level of priority.

The Applicant's definition of "priority" is expressly stated in the Detailed Description on page 8, lines 19-21, where it states "A group of packets is assigned a priority based on the customer's level of service plan. If the customer has signed up for the basic service plan and paid the smallest fee for the most basic service, his packets are assigned a low priority". (Emphasis added.) When read in light of the specification, the Applicant's claimed invention is patentably distinct from the Kilkki reference.

The "priority" as used in the Applicant's invention requires *a priori* knowledge of a customer's subscription rates, i.e. the rate that a customer has paid for and to which a customer is entitled and the rate at which the packets should routed. "Priority" as used in the Applicant's invention is not a quantized calculation based upon a measured data or bit rate. The Applicant's "priority" requires information to which most data-communication equipment does not have access (which is why Kilkki's data-communication patent could not specify a "priority level" that is related to a customer's willingness to pay for service).

A group of packets is assigned a priority based on the customer's level of service plan. If the customer has signed up for the basic service plan and paid the smallest fee for the most basic service, his packets are assigned a low priority. This priority is embedded in a packet identification that is assigned to the group of packets and is decoded when the group of packets enters the cable interface.

If the customer has signed up for the premium service plan with the cable company, his packets are assigned the highest priority. If the customer has signed up for any service plans that

Figure 3: Applicant's definition of "priority" as used in page 8 of the instant application.

Unlike Kilkki, the invention claimed in the instant application is not limited by the lack of knowledge related to customer payments that exists in most data-communications equipment, because the CMTS in the instant application is cognizant of the service level of all of the subscribers that are connected to it. This novel attribute of the CMTS is a direct result of the fact that the CMTS is designed specifically as an edge vehicle, so it has the benefit of knowing this information. Thus, "priority level"

information (about a customer's subscription rates) is available to the CMTS product – not calculated, and the instant invention thereafter becomes meaningful.

As for claims 11 and 12, to which the arguments regarding claim 6 also apply, unlike Kilkki, which really only specifies a means to process the packet in response to the flow rate (which is also Kilkki's priority level) and the buffer depth, claim 11 claims the need for a means to process the packet in response to the flow rate, the Applicant's definition of packet "priority", and a buffer depth. As set forth above, the Applicant's definition of packet priority is not at all like the Kilkki version of packet priority, which is calculated from flow rate. The Applicant's version of packet priority is determined from customer payment information. It is the combination of these three claimed parameters (flow rate, Applicant's-defined "priority" and buffer depth) that patentably defines the instant claims over Kilkki.

In light of the foregoing, reconsideration of claims 6, 11 and 12 and their allowance is respectfully requested.

Respectfully,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

7. (Twice amended) [The method of claim 6 wherein the four predetermined flow rates are determined by comparing the service flow's data packet flow rate with a minimum data rate threshold, a maximum data rate threshold, and a mid-level data rate threshold.]

A method for providing data packet congestion control for a data network having a buffer circuit, each data packet comprising a priority, the method comprising the steps of:

determining the particular service flow associated with the data packet;

detecting a current data packet flow rate through the data network for the particular service flow associated with the data packet;

quantizing the data packet flow rate into at least one level;

detecting a buffer circuit depth;

determining the priority associated with a current data packet; and

processing the current packet in response to the current data packet flow rate, the data packet priority, and the current buffer circuit depth.